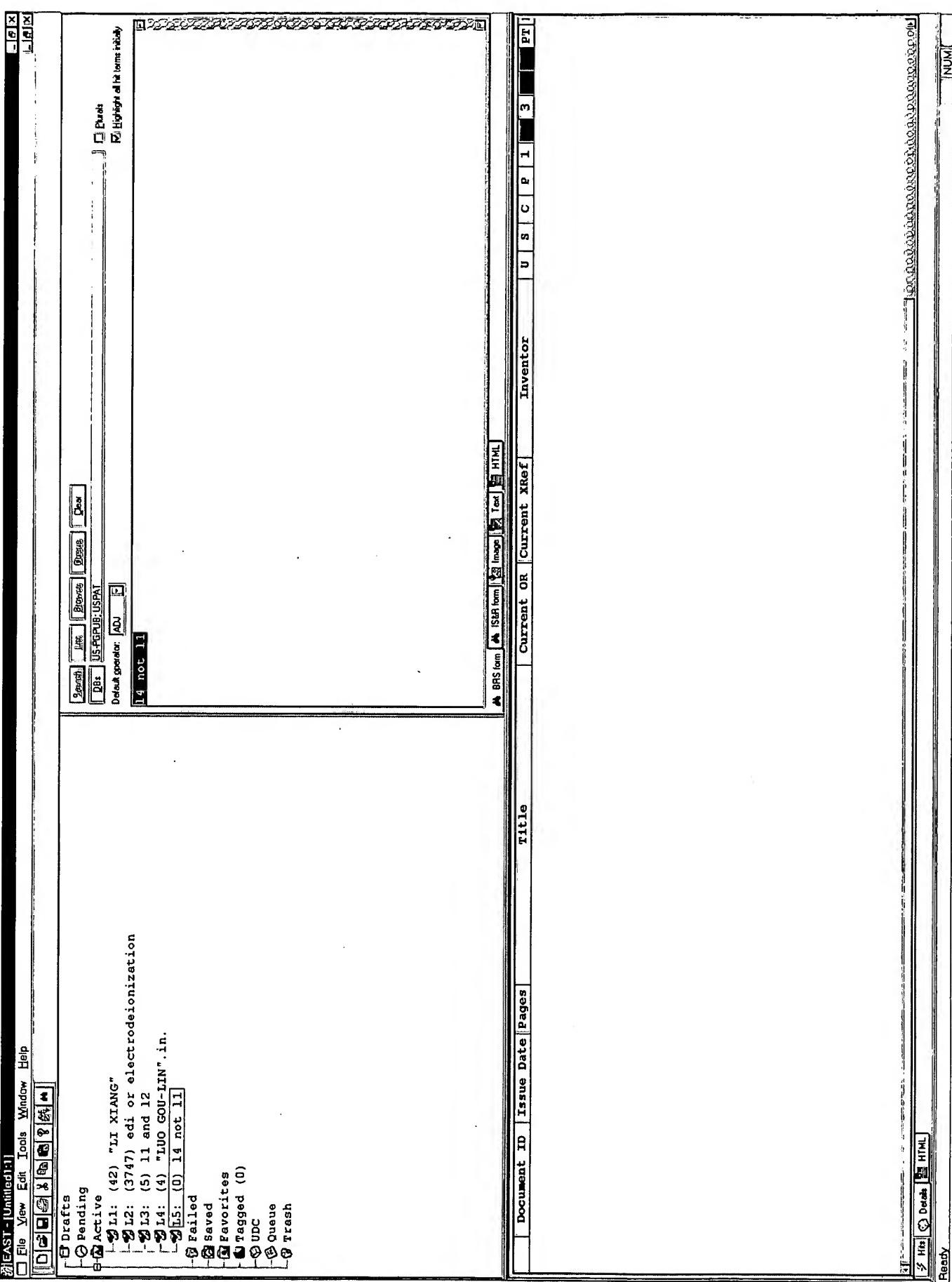
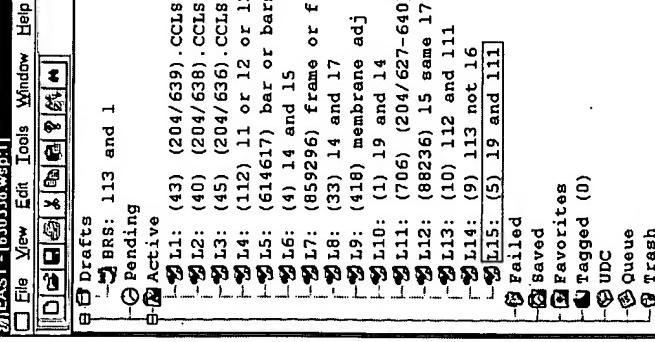


9/2005 SN 10/630,338 inventor name search



9/2005

FAST -63030.wsp:1



BRS: 113 and 1

L1: (43) (204/639).CCLS.

L2: (40) (204/638).CCLS.

L3: (45) (204/636).CCLS.

L4: (112) 11 or 12 or 13

L5: (614517) bar or bars

L6: (4) 14 and 15

L7: (853296) frame or frames

L8: (33) 14 and 17

L9: (418) membrane adj (bag or bags)

L10: (1) 19 and 14

L11: (706) (204/627-640).CCLS.

L12: (89236) 15 same 17

L13: (10) 112 and 111

L14: (9) 113 not 16

L15: (5) 19 and 111

19 and 111

Print Details Delete Print Highlight all the terms in this

Dis US PTO/USPTO Detail generator: ADV

Document ID	Issue Date	Pages	Title	Current OR	Current XRef	Inventor	U	S	C	P	I	3	PT
1 US 20040112752	2004/06/17	5	EDI device with resin seepage-proof inserts	204/632	204/633	Li, Xiang et al.	<input type="checkbox"/>						
2 US 20040055887	2004/03/25	5	EDI device with composite electrode	204/632	204/524	Li, Xiang et al.	<input type="checkbox"/>						
3 US 6190528 B1	2001/02/20	9	Helical electrodeionization apparatus	204/632	204/633	Li, Xiang et al.	<input type="checkbox"/>						
4 US 4639300 A	1987/01/27	9	Method and apparatus for electrofiltration	210/638	204/516; 204/517;	Culkin; Joseph B.	<input type="checkbox"/>						
5 US 3657105 A	1972/04/18	4	ELECTRODIALYSIS APPARATUS	204/627		Veld; Willem In't	<input type="checkbox"/>						



	US Pat No:	Patent No. - PN (1) :
DOCUMENT-IDENTIFIER:	US 5376253 A	
TITLE:	Apparatus for the continuous electrochemical desalination of aqueous solutions	
RWTC	- - - - -	

US-PAT-NO: 5376253

FOREIGN PATENT DOCUMENTS

US50357625A

[11] Patent Number: 5,376,253

[45] Date of Patent: Dec. 27, 1994

[12] FOREIGN PATENT DOCUMENTS

011337 5/1991 European Pat. Off.

225718 11/1975 French

445634 6/1934 United Kingdom

1192531 5/1970 United Kingdom

[13] OTHER PUBLICATIONS

Devaluation 16, 225-233 (1975), Elsevier Scientific

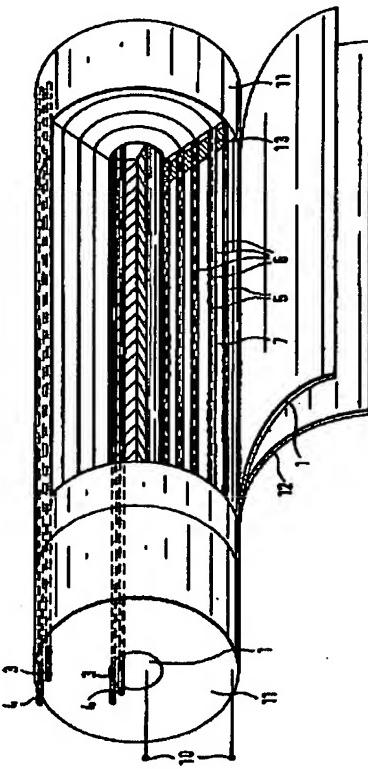
Publishing Co., Amsterdam.

Primary Examiner—John Nuding
Assistant Examiner—Arno S. Phage
Attorneys, Agents, or Firms—Wendroff, Lind & Penack

ABSTRACT

An apparatus for the continuous electrochemical desalination of aqueous solutions includes a wound module having a central electrode, around which are wound an outer exchange membrane and an outer common electrode. Each membrane is sealed at its inner edge thereof and at a outer edge by a respective clamping device, or are anchored in a synthetic resin block. In such a way that a dilution chamber and a concentrate chamber are defined. The dilution chamber and/or the concentrate chamber may contain an ion exchange resin. The central electrode and the outer common electrode each may have a constriction over at least a part of the circumference thereof. The central electrode may furthermore have a recess for receiving the inner clamping device or the inner synthetic resin block in order to achieve a winding having a spiral cross section as positive.

19 Claims, 5 Drawing Sheets



U.S. PATENT DOCUMENTS

[30] Foreign Application Priority Data

May 15, 1992 [CH] Switzerland 01 569/92-3

Nov. 26, 1992 [CH] Switzerland 01 670/92-3

[31] Int. Cl' B01D 61/44 C02P 1/49

[52] U.S. Cl' 204/301, 204/182.4, 204/182.5

[35] Field of Search 204/301, 182.4, 182.5

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US-PAT-NO:	DOCUMENT-IDENTIFIER:	TITLE:	RNTC
4225413	US 4225413 A	spiral wound electrodialysis cell	-----

US Patent No. - PN (1):

4225413
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4/1993 3/1993 Ono et al. 204/301
1,869,375 3/1973 Ono et al. 204/301

United States Patent [19]

Kurn

[11] 4,225,413

Sep. 30, 1980

[54] SPIRAL WOUND ELECTRODIALYSIS CELL.

[76] Inventor: William S. Kurn, 518 Dickson Ave., Pittsburgh, Pa. 15202

[21] Appl. No.: 41,937

[22] Filed: May 24, 1979

[31] Int. Cl.: B01D 13/02

[52] U.S. Cl.: 204/301; 204/180 P

[58] Field of Search: 204/301; 204/180 P

[36] References Cited

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204/301

204/301

11 Claims, 4 Drawing Figures

ABSTRACT
 Two ion selective semipermeable membranes, such as are used in electrodialysis cell assemblies, are joined to one another at their edges so as to form a pouch with one permeable wall. The membranes are provided with end flow ports into the pouch region. The pouch is wound into a spiral so as to resemble a coiled spring or reverse coiled snail shell. A central hub electrode and a peripheral cylindrical electrode are provided. With suitable electrolyte streams the system operates as an electrodialysis cell assembly.

